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NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION			HE, JIALONG	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/708,576	<b>Applicant(s)</b> HSU, CHIEN-HUA	
	<b>Examiner</b> JIALONG HE	<b>Art Unit</b> 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Examiner Change***

1. It should be note the Examiner was changed due to the previous examiner being no longer available.

### ***Response to Amendment***

2. Applicant's amendment filed on 12/31/2008 has been entered. Claims 1, 3, 9, 15 and 19 have been amended. No claims have been added or canceled. Claims 1-22 are still pending in this application, with claims 1, 9, 15 and 19 being independent.

Applicant amended claims 1, 3, 9, 15 and 19 to overcome rejections under 35 USC 112 2<sup>nd</sup> paragraph. The previous rejections under 112 2<sup>nd</sup> paragraph have been withdrawn.

### ***Claim Objections***

3. Claims 9 and 19 are objected to because of the following informalities:

Claim 9 recites limitations with phrase "**for...**". For example, claim 9, line 3 recites "a polyphase filter bank for ...". The limitations after "for" are not positive limitations and are only indented use.

Claim 19 has problems similar to claim 9.

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-8 and 15-18 are rejected under 35 USC 101 as not falling within one of the four statutory categories of invention. While the claim(s) recite a series of steps or acts to be performed, a statutory "process" under 35 USC 101 must (1) be tied to another statutory category (such as a manufacture or a machine), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The claims recite some steps which can be performed manually without the use of a particular machine. The instant claims neither transform underlying subject matter nor positively recite structure associated with another statutory category, and therefore do not define a statutory process.

Claim 1 recites steps of coding an input signal including **"performing a subband coding process, ..."; "performing a selection process ..."; and "performing Fourier-related transform ..."**. However, an input signal can be represented by a mathematical equation (e.g.,  $s(n) = 100, 244, 323, -233, \dots$ ). Filtering a digital speech signal, each filtered point can be obtained by weighted sum of digital coefficients and

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speech samples (represented as a sequence of numbers) with proper delay ( $y(n) = \text{SUM}(b(i) * s(n-i))$ ). In discrete Fourier transform which involves multiplication and addition operations, each frequency component can be obtained based on the definition of discrete Fourier transform equation. The sine and cosine values can be obtained by table looking. Therefore, filtering, Fourier transform and selection steps can be done manually on paper with pen without using a particular machine.

Dependent claims 2-8 do not remedy deficiencies of claim 1. Therefore, claims 2-8 are also rejected.

Claim 15 has problems similar to claim 1 and dependent claims 16-18 do not remedy deficiencies of claim 9. Therefore, claims 10-14 are also rejected.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites a limitation "different subband samples corresponding to the input signal in different time intervals, each of the subband samples having a plurality

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of frequency subbands". Since "different subband samples" appears to represent frequency components, it is not clear which "different subband samples" correspond to which different time intervals. Based on the most relevant section in the specification ([0006]) and drawing (fig. 3), the Examiner interprets the limitation as the speech signal time samples are divided into multiple segments (frames) (**different time intervals as shown "t" interval in Fig. 3**), the time samples in each frame are further filtered with filter bank to generate a vector whose components are subband samples representing several frequency bands.

It is also not clear what the limitation "each of the subband samples having a plurality of frequency subbands" means. How can **each (one) subband sample** have a plurality of frequency subbands. The examiner interprets this limitation as each frequency subband's time samples are further analyzed using MDCT algorithm to obtain plurality frequency components.

Claim 2 recites a limitation "dividing the reference sample data into several subsample data, each subsample data having at least a subband sample". It is not clear what this limitation means. Term "subsample" is not explicitly defined in the specification. The commonly accepted meaning for "subsample" in speech coding art is time resolution that is smaller than the time between two samples. However, based on closest section in the specification ([0021]), instead of using this ordinary meaning, the applicant appears to mean dividing a frame of a speech signal into some smaller blocks

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(or subframe) and analyzing frequency components in these smaller blocks. For examination purpose, the examiner interprets this limitation as dividing a frame of a speech signal into smaller blocks and analyzing frequency components of these smaller blocks.

Claims 4-8 depend on indefinite claim 1, therefore, claims 4-8 are also rejected.

Claim 9 has problems similar to claim 1, therefore, claim 9 is rejected.

Claim 11 has a problem similar to claim 3, therefore, claim 11 is rejected.

Claims 10 and 12-14 depend on indefinite claim 9, therefore, claims 10, 12-14 are rejected.

Claim 15 has problems similar to claim 1, therefore, claim 15 is rejected.

Claim 16 recites "the two subsample data". There is insufficient antecedent basis for this limitation in the claim. It is not clear which two subsample data.

Claim 17 has a problem similar to claim 2, therefore, claim 17 is rejected.

Claim 18 depends on indefinite claim 17, therefore, claim 18 is also rejected.

Claim 19 has problems similar to claim 1, therefore, claim 19 is rejected.

Claims 20-22 depend on indefinite claim 19, therefore, claims 20-22 are rejected.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 6-9, and 12-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Manu (US Pat. 2004/0088160, hereinafter referred to as Manu).

Regarding claim 1, Manu discloses a method for coding an input signal to an output signal, the method comprising:

performing a subband coding process to produce a plurality of subband samples according to the input signal, different subband samples corresponding to



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the input signal in different time intervals, each of the subband samples having a plurality of frequency subbands ([0063], **also fig. 2 #210 and fig. 3**);

performing a selection process to provide a data window corresponding to a predetermined block length, the window including a plurality of weighted values, the selection process including selecting subband samples from the plurality of subband samples as reference sample data according to a predetermined frequency range, and determining the block length of the window according to an energy sum of the reference sample data ([0017], **calculate a energy level to determine whether to perform window switching; when applying a window to a signal ( $s(n) * w(n)$ ), window coefficient (e.g., Hamming window) are weighted values; [0083], fig. 4, #430, calculating subband energy; fig. 4, #410-#450, decide if performing window switching based on calculated energy from output of filter bank**); and

performing a Fourier-related transform process to multiply the plurality of frequency subbands by the plurality of weighted values of the window determined in the selection process for producing a weighted result, and to generate the output signal by a predetermined time-domain to frequency-domain transform algorithm according to the weighted result ([0022] **and fig. 2, #120, performing complex modified discrete cosine transform (CMDCT) for windowed signal, also fig. 8**).

Regarding claim 6, which depends on claim 1, Manu further discloses the input signal is a pulse code modulation (PCM) signal (**Title and fig. 1, input digital audio signal (PCM signal)**).

Regarding claim 7, which depends on claim 1, Manu further discloses the output signal is bit stream (**fig. 1, #160**).

Regarding claim 8, which depends on claim 1, Manu further discloses the predetermined algorithm is a modified discrete cosine transform (MDCT) (**fig. 1, #120**).

Regarding claim 9, Manu discloses a coding apparatus for coding an input signal to an output signal, the coding apparatus comprising:

a polyphase filter bank for producing a plurality of subband samples according to the input signal, different subband samples corresponding to the input signal in different time intervals, each subband sample having a plurality of frequency subbands (**fig. 2, #210, also fig. 3**);

a transient detector connected to the polyphase filter bank for determining a block length of a data window, the window including a plurality of weighted values, the transient detector including (**[0079]**):

a subband selector for selecting a portion of the plurality of subband samples as reference sample data according to a predetermined frequency range (**[0082], also fig. 3, frequency range is in vertical axis**);

an energy calculator connected to the subband selector for calculating an energy sum of the reference sample data (**[0083]**);

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a partition device connected to the subband selector and the energy calculator for dividing the reference sample data into several subsample data, each subsample data having at least a subband sample ([0082-0083], also fig. 3); and

a comparator connected to the energy calculator for comparing an output value of the energy calculator with a first threshold value, and outputting a signal representing the block length of the window according to a comparing result ([0083-0090]); and

a coding processing unit connected to the polyphase filter bank and the transient detector for multiplying the plurality of frequency subbands by the plurality of weighted values of the window to generate a weighted result, and generating the output signal by a predetermined time-domain to frequency-domain transform algorithm according to the weighted result (fig. 2, #220 and #230, also fig. 6).

Claims 12-14 are apparatus claims and are similar to claims 6-8, respectively.

Therefore, claims 12-14 are rejected based on the same rationale.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claims 2, 5, 10, 15-16, 19-20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manu in view of Wang et al. (US PGpub. 2002/0178012, hereinafter referred to as Wang).

Regarding claim 2, which depends on claim 1, Manu discloses all limitations of claim 1, Manu further discloses the selection process further execute a first comparing process comprising: dividing the reference sample data into several subsample data, each subsample data having at least a subband sample (**fig. 3, frame n is divided into 3 subframes, each subframe has at least a subband sample**); and calculating an energy ratio of the frequency subbands between two adjacent subsample data in the predetermined frequency range, if the energy difference is larger than a second threshold value, using a window of a short block length in the transform process (**[0083 - 0090], comparing energy ratio between adjacent subframes with a predetermined range** (a second threshold value), **if the ratio exceeds the range, indicating a transient and switch to short window, also see fig. 4**).

Manu discloses detecting energy ratio between adjacent subframes to decide if a transient exists in the speech. Manu does not disclose comparing full band energy (energy sum) with a threshold and using energy difference between subframes.

Wang disclose first comparing energy of full-band with a threshold (first threshold) and then using difference of subband energy to determine if a transient (beat) exists in a signal (**Wang, [0036-0049] and fig. 7, #157-#161, #163 - #167**).

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Manu and Wang are analogous art and from a similar field of applicant's endeavor in speech coding. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Manu's teaching to compare full-band energy with a threshold and also substituting energy ratio of Manu with energy difference as taught by Wang. A ratio of two numbers contains similar information as difference of two numbers. Both ratio (dividing) and difference (subtraction) can be used to measure the degree of difference between two numbers.. Simply combining a known step (comparing the full-band energy with a threshold) and the combination each element merely would have performed the same function as it did separately, one of ordinary skill in the art would have recognized that the results of the combination were predictable. Also Simple substitution of one known element for another (energy difference in instead of energy ratio) producing a predictable result renders the claim obvious.

Regarding claim 5, which depends on claim 2, Manu in view of Wang discloses all limitations of claim 2, Manu in view of Wang further discloses if the energy sum of the frequency subbands of the reference sample data in the predetermined frequency range is less than the first threshold value, then transform with a window of a long block length in the transform process ([0083-0090]).

Claim 10 is an apparatus claim and is similar to claim 2, therefore, claim 10 is rejected based on the same rationale.

Regarding claim 15, Manu discloses a method for transient detection when coding an audio signal, the method comprising the following steps:

(a) producing a plurality of subband samples according to the audio signal, different subband samples corresponding to the audio signal in different time intervals, each subband sample including a plurality of frequency subbands ([0063], also fig. 2 #210 and fig. 3);

(b) selecting subband samples from the plurality of subband samples as reference sample data according to a predetermined frequency range and calculating an energy sum of the reference sample data ([0017], [0083]);

(c) dividing the reference sample data into several subsample data, each subsample data having at least a subband sample ([0082-0083]); and

(d) calculating an energy ratio of the frequency subbands between two adjacent subsample data in the predetermined frequency range, and according to the energy difference determining whether there is a transient of the audio signal of a time interval corresponding to the subsample data ([0083-0090]).

Manu discloses detecting energy ratio between adjacent subframes to decide if a transient exists in the speech. Manu does not disclose comparing full band energy (energy sum) with a threshold and using energy difference between subframes.

Wang disclose first comparing the energy of full-band with a threshold (first threshold) and then using difference of subbands to determining if a transient (beat) exists in a signal (Wang, [0036-0049] and fig. 7, #157-#161, #163 - #167).

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Manu and Wang are analogous art and from a similar field of applicant's endeavor in speech coding. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Manu's teaching to compare full-band energy with a threshold and also substituting energy ratio of Manu with energy difference as taught by Wang. A ratio of two numbers contains similar information as difference of two numbers. Both ratio (dividing) and difference (subtraction) can be used to measure the degree of difference between two numbers. Simply combine a known step (comparing the full-band energy with a threshold) and the combination each element merely would have performed the same function as it did separately, one of ordinary skill in the art would have recognized that the results of the combination were predictable. Also Simple substitution of one known element for another (energy difference in instead of energy ratio) producing a predictable result renders the claim obvious.

Regarding claim 16, which depends on claim 15, Manu in view of Wang discloses all limitations of claim 16, Manu in view of Wang further disclose when determining the transient of the audio signal according to the energy difference in step (d), if the energy difference is larger than a second threshold value, determining the audio signal between the two subsample data is the transient ([0083-0090]).

Claim 19 is a transient detector claim and is similar to claim 15. Therefore, claim 19 is rejected based on the same rationale.

Claim 20 is similar to claim 16, therefore, claim 20 is rejected based on the same rationale.

Regarding claim 22, which depends on claim 19, Manu in view of Wang disclose all limitations of claim 19, Manu in view of Wang further disclose the audio signal is a pulse code modulation (PCM) signal (**Title and fig. 1, input digital audio signal (PCM signal)**)).

12. Claims 3-4, 11, 17-18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manu in view of Wang and further in view of Davidson (US Pat. 5,394,473, hereinafter referred to as Davidson).

Regarding claim 3, which depends on claim 2, Manu in view of Wang discloses all limitations of claim 2, Manu in view of Wang discloses comparing the energy difference between adjacent subbands with a predetermined range and deciding to use a long window or short window (Manu, [0083-0090], also fig. 3). Manu in view of Wang does not disclose if the energy difference is less than or equal to the second threshold value, performing a second comparing process with different length of subblocks.

Davidson discloses detecting transient by performing a second comparison with a different length of subblock (**col. 23, lines 6-56, col. 45, lines 64-68, also fig. 5**).

Manu, Wang and Davidson are analogous art and from a similar field of



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applicant's endeavor in coding speech. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Manu in view Wang's teaching with Davidson's teaching by partitioning a frame into different length of subblocks and detecting transient. One having ordinary skill in the art would have been motivated to make such a modification because the optimum length can be obtained to preserve sufficient transform frequency selectivity (**Davidson, col. 10, lines 25-53**)

Regarding claim 4, which depends on claim 3, Manu, Wang and Davidson disclose all limitations of claim 3, Davidson further discloses when performing the second comparing process, a different second threshold value is selected (**col. 24, lines 20-30**). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Manu, Wang and Davidson's teaching with Davidson's teaching to use a different threshold for a different comparison because a threshold for comparison depends on the data range to be compared. The second comparison involves different data, therefore, selecting a second threshold based on the data in the second comparison makes comparison more accuracy.

Claim 11 is an apparatus claim and is similar to claim 3. Therefore, claim 11 is rejected based on the same rationale.

Claims 17-18 are similar to claims 3-4, respectively. Therefore, claims 17-18 are rejected based on the same rationale.

Claim 21 is similar to claim 17, therefore, claim 21 is rejected based on the same rationale.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JIALONG HE whose telephone number is (571) 270-5359. The examiner can normally be reached on Monday-Thursday, 7:00AM-4:30PM, ALT. Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571)272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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2/26/2009

/Talivaldis Ivars Smits/  
Primary Examiner, Art Unit 2626

/JH/